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ABSTRACT

This bulletin provides general information about the achievement testing program and specific information about the design, the composition, and the scoring of the Grade 3 Mathematics Achievement Test in Alberta. Contents included are: (1) "General Information," describing the purpose, nature, and administration of the program; (2) "Description of the Grade 3 Mathematics Achievement Test," describing two sections of the test including sample questions; and (3) "Performance Standards," discussing acceptable and excellent levels of achievement. An article answering several questions about the test is appended. (YP)

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Student Achievement Testing Program Bulletin

Grade 3 Mathematics

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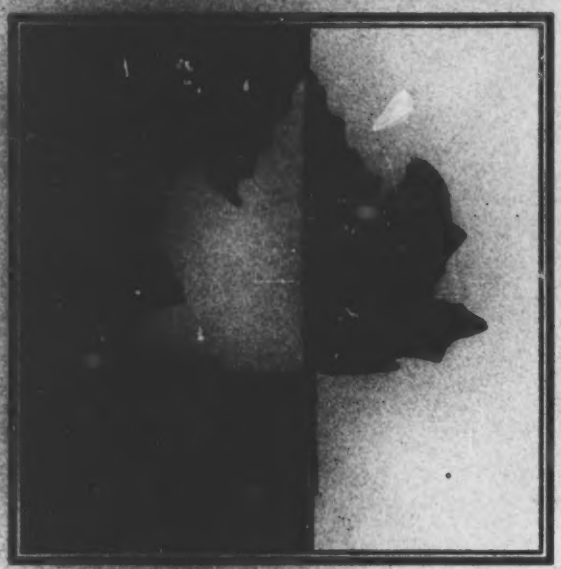

1989-90 School Year

Students First!

Student Evaluation and Records

Alberta EDUCATION

September 1989

SE051207

BEST COPY AVAILABLE

This bulletin contains general information about the 1990 Student Achievement Testing Program, and information specific to the Grade 3 Mathematics Achievement Test. Additional copies of this bulletin may be obtained by telephoning Alberta Education at 427-2948.

DISTRIBUTION: Superintendents of Schools • School Principals and Teachers • Alberta Teachers' Association • Alberta School Trustees' Association • Officials of Alberta Education • General Public upon Request

September 1989

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PURPOSE OF THE BULLETIN

The Grade 3 Mathematics Achievement Test will be written on June 12, 1990. This bulletin provides general information about the Achievement Testing Program as well as specific information about the design, the composition, and the scoring of the Grade 3 Mathematics Achievement Test.

The *Grade 3 Mathematics Curriculum Specifications (revised July 1984)*, present the specific content and objectives for Grade 3. These specifications are used as a guide for the development of the test questions.

Students should have access to the information in this bulletin, particularly to the sample questions.

Questions or comments regarding this bulletin should be directed to:

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GENERAL INFORMATION

Purpose of the Achievement Testing Program

The Achievement Testing Program provides Alberta Education, school jurisdictions, and the public with information significant at the provincial and local levels about student knowledge, understanding, and skills in relation to program objectives. This program is not intended to provide information to be used for student placement or promotion.

The achievement tests are administered on a four-year cycle in four subject areas: language arts, social studies, mathematics, and science; and at three grade levels: 3, 6, and 9.

Nature of the Achievement Testing Program

The achievement tests are specific to the program of studies prescribed by the Minister of Education. Curriculum specifications for each subject area, provided by the Curriculum Branch and the Language Services Branch of Alberta Education, identify the major content areas, the specific learning objectives within each content area, and the emphasis that each objective is to receive. The test questions reflect these curriculum specifications. They also reflect the standards that are implicit in the curriculum. For further information about these standards refer to pages 26 to 28.

Classroom teachers from across the province are extensively involved in developing and field testing the questions. The student responses are analysed after field testing to determine each question's suitability for inclusion on an achievement test. Questions may undergo several revisions before they appear on the achievement test.

The final draft of each test is examined by an Achievement Test Review Committee that includes representatives of The Alberta Teachers' Association, the Conference of Alberta School Superintendents, Alberta's post-secondary institutions, and Alberta Education.

Exemptions from the Achievement Testing Program

All students who have been taught the subject being tested are expected to participate in the Achievement Testing Program. Any exceptions should be identified by the principal and approved by the superintendent of schools.

The only students who may be excused from participating are those for whom the test is inappropriate:

1. Students who are enrolled in an approved program that has been designed for special needs students.
2. Students who were taught the subject being tested in another semester or year.
3. Students who would normally write mathematics, science, or social studies but who are enrolled in an English as a Second Language program.
4. Students who are being taught the specific subject being tested (mathematics, science, or social studies) in a language other than English.

Exemptions for reasons other than those outlined must be approved by the Director of the Student Evaluation and Records Branch.

Note: All Grade 9 students are expected to write the Grade 9 English Language Arts Achievement Test in 1990.

Students Receiving Instruction in French

A French language arts achievement test is available and Francophone and French Immersion students are encouraged to write it. A French translation of the Grade 6 Science Achievement Test is also available. School jurisdictions are requested to identify the number of English and French versions of the achievement tests, that they require, on forms that Alberta Education will send to them by February 1, 1990. These forms must be returned through each jurisdiction office by March 9, 1990.

Administration of the Achievement Testing Program

The Achievement Testing Program is administered in accordance with *Examination Regulation 531/82* pursuant to Section 11(1)(g) of the *School Act*. The achievement tests must be administered on the scheduled dates and may not be rescheduled.

The achievement tests must remain unopened until the time of administration. Duplication of any test materials, including the test booklets and answer sheets, is expressly forbidden.

Immediately following the administration of the scheduled achievement tests, the principal must ensure that test booklets and answer sheets are forwarded to school board offices. The school board is responsible for collecting and forwarding to the Student Evaluation and Records Branch all test materials containing students' responses. Further details regarding procedures for returning these materials to the Branch will be issued when the achievement tests are delivered. For private schools, the Regional Offices of Alberta Education assume responsibility for collecting and forwarding test materials to the Student Evaluation and Records Branch. All unused testing material may be retained by the school jurisdiction.

Alberta Education will supervise the scoring of all achievement tests. The scoring of achievement tests by school personnel prior to returning test materials to the Student Evaluation and Records Branch is a violation of the *Examination Regulation* and contrary to the intent of the Achievement Testing Program.

During 1990, the achievement tests will be administered according to the following schedule:

Tuesday, June 12, 1990

Grade 3 Mathematics (a.m.)

Grade 6 Science* (a.m.)

Grade 9 English Language Arts (a.m. and p.m.)

Thursday, June 14, 1990

Grade 9 French Language Arts (a.m. and p.m.)

In 1991, the achievement tests will be administered according to the following schedule:

Tuesday, June 11, 1991

Grade 3 Science (a.m.)

Grade 6 Mathematics* (a.m.)

Grade 9 Social Studies* (a.m.)

* A French translation of this test is available. The French translation must be administered at the same time as the English version.

Reporting the Achievement Test Results

In September, 1990, a provincial report will be issued that will present the overall results for the province on major curriculum dimensions. Each jurisdiction will receive a district profile of student achievement to parallel the provincial report, as well as guidelines for interpreting the jurisdictional results in relation to provincial standards. Alberta Education will not issue individual statements of results to students; individual student profiles will be returned to superintendents.

Any students who write a test, although qualified for exemption, will not have their scores included in the provincial results. Separate jurisdiction and school reports will be prepared for these students.

Jurisdictions and schools who choose to have their Francophone and/or French Immersion program students write the Grade 6 Science Achievement Test either in English or in French translation will receive separate jurisdiction and school reports for those students. As well, the Student Evaluation and Records Branch is addressing methods of appropriately reporting these results and those for the Grade 9 French Language Arts Achievement Test on a provincial level. The preparation of a special report on results for students in French language programs is anticipated in the fall of 1990.

DESCRIPTION OF THE GRADE 3 MATHEMATICS ACHIEVEMENT TEST

General Description

The test consists of two sections. Section 1 is divided into two parts: Part A consists of 25 questions covering numeration, geometry and graphing. Part B consists of 25 questions covering operations and properties, measurement, and problem-solving strategies. Section 2 consists of four basic-facts tests in addition, subtraction, multiplication and division. Each basic-facts test contains 32 questions.

The total time allotted for writing the Grade 3 Mathematics Achievement Test is 58 minutes: 25 minutes each for Part A and Part B of Section 1, and two minutes for each basic-facts test of Section 2. It is recommended that rest breaks of approximately 10 minutes be given to the students after Part A and Section 1.

All questions in Section 1 are multiple-choice with four alternatives. Students will answer questions in the test booklet by filling in a small circle beside or below the correct response. There is no separate answer sheet. Students will require HB pencils, erasers, and scrap paper.

Students may NOT use calculators or rulers while writing this test.

Content of the Test

The test is based on the 1982 Curriculum. Content emphasis is derived from the *Grade 3 Mathematics Curriculum Specifications* (revised, July 1984). The psychomotor and attitude components of the Grade 3 mathematics program are not assessed on this test*. The weighting allocated to the development of these objectives in the curriculum specifications has been reassigned to the subject matter and problem-solving components on a prorated basis.

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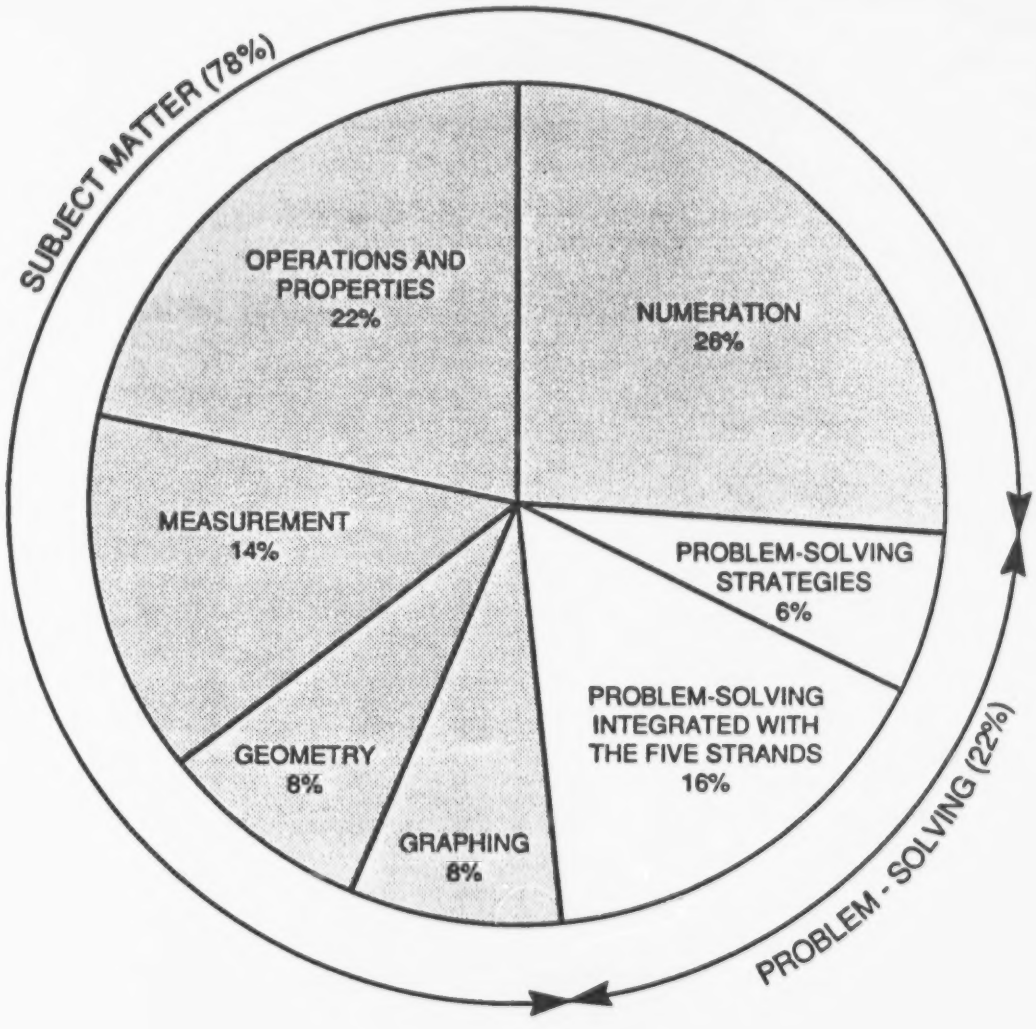
*Although these objectives are important, they cannot be appropriately assessed on a paper and pencil test of achievement.

Section 1: Subject Matter and Problem-Solving

The subject matter component covers five strands: numeration, operations and properties, measurement, geometry, and graphing. The problem-solving component is divided into two parts: problem-solving integrated with subject matter and problem-solving strategies. The emphasis given to each subject matter strand and to each part of the problem-solving component is shown in the circle graph below.



Questions on subject matter measure student achievement at three cognitive levels: knowledge, comprehension and application.

The subject matter and problem-solving components are divided into two parts to be administered at two sittings.

The distribution of questions that test subject matter and problem-solving skills, respectively, is presented in the table below.

Blueprint for Section 1 of the Achievement Test

Content	Subject Matter By Cognitive Levels			Total Subject Matter	Problem Solving	Total No. of Questions
	Knowledge	Comprehension	Application			
Part A						
Numeration	4	8	1	13	2	15
Geometry	1	1	2	4	1	5
Graphing	1	1	2	4	1	5
Subtotal	6	10	5	21	4	25
Part B						
Operations and Properties	4	5	2	11	2	13
Measurement	1	4	2	7	2	9
Problem-Solving Strategies	-	-	-	-	3	3
Subtotal	5	9	4	18	7	25
TOTAL SECTION 1	11	19	9	39	11	50

Section 2: Basic Facts

This section of the test consists of four timed tests. They measure student mastery of basic facts involving sums and minuends to 18, and products and dividends to 45.

The order of the basic-facts tests, and the number of questions on each test are presented in the table below.

Blueprint for Section 2 of the Achievement Test

Operations	No. of Questions
Addition	32
Subtraction	32
Multiplication	32
Division	32

Basic-facts tests measure students' speed as well as accuracy. It is not expected that all students will be able to finish all the questions. However, students should be encouraged to do as many questions as they can.

To measure students' speed on basic-facts questions, it is essential that students answer questions in the correct sequence. The layout of basic-facts tests has been designed to facilitate this. Two conventions may be used on the test:

6 + 3 =	6 − 3 =	6 x 3 =	6 ÷ 3 =
6 + 3	6 − 3	6 x 3	3 ⟌6

Standard Setting

Standard setting is a process whereby teachers are asked to make judgements related to the achievement test to answer the questions of whether province-wide performance is satisfactory. For more information on standard setting procedures refer to Appendix B of the Achievement Testing Program, Provincial Report, June 1989 Administration.

Selection of Standard Setters

To qualify for recommendation by a superintendent, a prospective standard setter must have taught Grade 3 mathematics for two or more years, currently be teaching Grade 3 mathematics, and hold a valid permanent Alberta teaching certificate.

Superintendents will be contacted in March 1990 for their recommendations. The Student Evaluation and Records Branch will select approximately 20 teachers from the list of recommended standard setters. Selections will be made to reflect a proportional representation from the various regions of Alberta. Standard setters will be contacted in May.

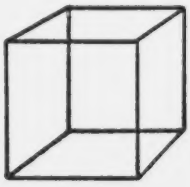
Sample Questions

Sample questions that reflect the nature and complexity of the questions that will appear on the test are presented on the following pages. The print size on the actual achievement test will be slightly larger than that shown in this bulletin.

Teachers are encouraged to familiarize their students with the type of questions that will appear on the achievement test by having them work through the sample questions.

Please note that this collection of questions does not represent the test emphasis as presented in the blueprint.

Question 1 **You need one straw to make each edge of this object.**



How many straws would it take to make the above object?

- O 12
- O 10
- O 9
- O 8

Program Component: Subject Matter, geometry - constructs simple three dimensional objects
Cognitive Level: Comprehension
Difficulty: Of the students tested with this item, 78% chose the keyed answer, indicating that the question is a relatively easy one.

In this question students are required to understand the concept "edge" and count the edges to find the number of straws it would take to construct the cube.

Question 2

I am a number between 0 and 29.

You can find me by counting by 5s.

You can find me by counting by 10s.

What number am I?

5	10	25	29

0 5

0 10

0 25

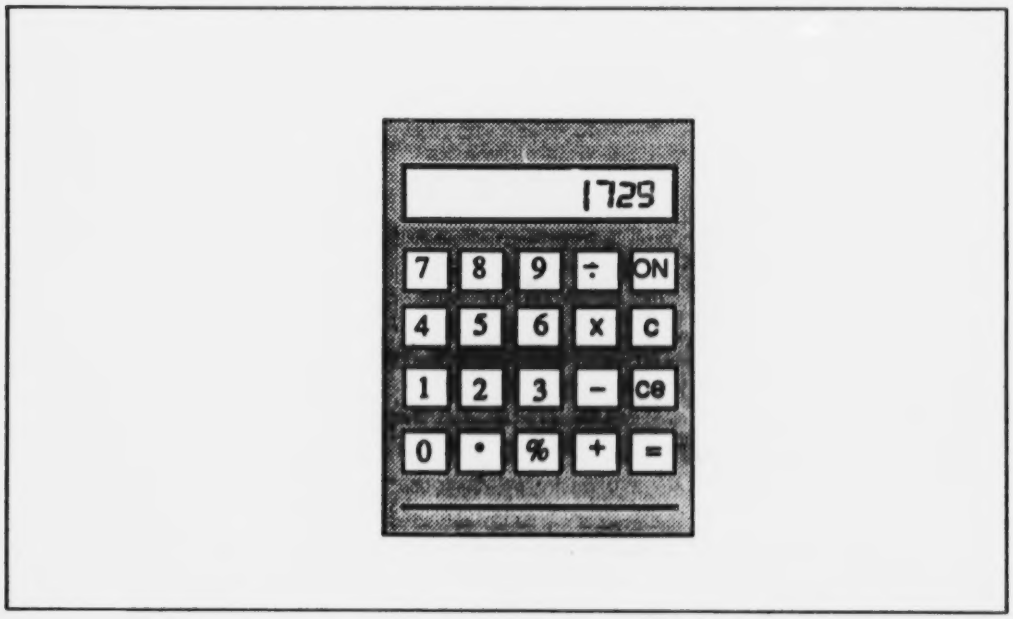
0 29

Program Component: Subject Matter, numeration - identifies multiples by counting by 2s and 5s.
Cognitive Level: Problem-Solving
Difficulty: This item is predicted to be more difficult than average.

In this question, students are required to apply the given multiples to correctly fit one of four given numbers. They may use strategies from the four stages of the problem solving process.

Question 3

Look at this picture of the calculator.



What must be added to 1729 to get 1759?

0 3 ones

0 3 tens

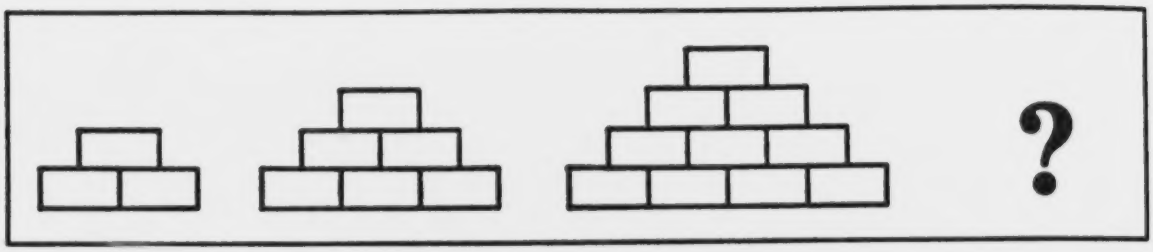
0 3 hundreds

0 3 thousands

Program Component: Subject Matter, numeration - identifies the number of 10s in a number.
Cognitive Level: Comprehension
Difficulty: This item is predicted to have a difficulty of 56%, indicating that the question is of average difficulty.

In this question, students must determine that the digit being changed is in the tens place, and then must infer how many tens are requied for the new number.

Question 4



How many blocks would be in the next picture?

0 17

0 15

0 13

0 11

Program Component: Problem-Solving Skills and Strategies outside the curriculum content
Cognitive Level: Problem-Solving
Difficulty: Of the students tested with this item, 44% chose the keyed answer, indicating that the question is more difficult than average.

In this question students are required to interpret the pattern sequence to predict the next number of blocks. They may use strategies from the four stages of the problem-solving process.

Question 5

476 is the same as

0 4 x 100 + 7 x 100 + 6 x 1

0 4 x 100 + 7 x 10 + 6 x 1

0 4 x 10 + 7 x 10 + 6 x 1

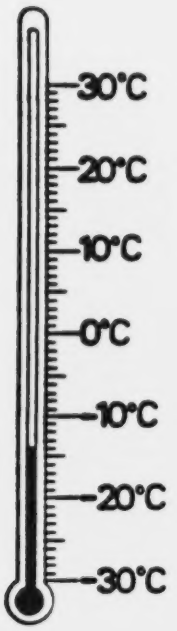
0 4 x 10 + 7 x 1 + 6 x 1

Program Component: Subject Matter, numeration - identifies numbers in expanded notation
Cognitive Level: Comprehension
Difficulty: Of the students tested with this item, 41% chose the keyed answer, indicating that the question is a difficult one.

In this question students are required to match the given number to its correct expanded form.

Question 6 **The temperature shown is**

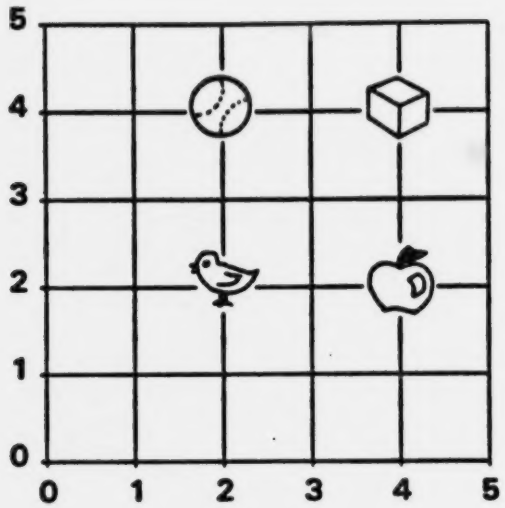
O -14°C
O 14°C
O -26°C
O 26°C



Program Component: Subject Matter, measurement - reads the Celsius thermometer to one degree intervals and uses the symbol (°C)
Cognitive Level: Comprehension
Difficulty: Of the students tested with this item, 46% chose the keyed answer, indicating that the question is more difficult than average.

In this question, students are required to read the temperature depicted on the picture of a Celsius thermometer.

Question 7 **Study this grid.**



Where is the ball on the grid?

- O across 4, up 2
- O across 4, up 4
- O across 2, up 2
- O across 2, up 4

Program Component: Subject Matter, graphing - locates position of an object on a grid.
Cognitive Level: Knowledge
Difficulty: Of the students tested with this item, 71% chose the keyed answer, indicating that the question is somewhat easier than average.

In this question, students are required to use recall in locating an object on a grid.

Question 8 **John has 3 bags of marbles.**

There are 7 marbles in Bag A and 5 marbles in Bag C. To find out how many marbles John has in all, you will need to know the

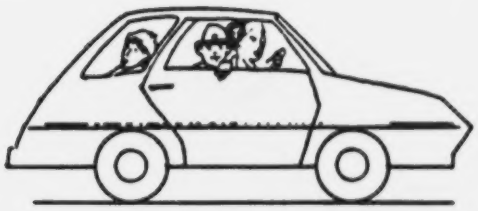
- O number of marbles in Bag B
- O number of marbles in Bag C
- O colors of the marbles
- O sizes of the marbles

Program Component: Problem-Solving Skills and Strategies outside the curriculum content
Cognitive Level: Problem-Solving
Difficulty: Of the students tested with this item, 87% chose the keyed answer, indicating that the question is very easy.

In this question, students are required to identify needed information. They may use strategies from the four stages of the problem-solving process.

Question 9

Bob's team plays hockey at 8:00
It takes 25 minutes to drive to the rink,



and 15 minutes to change.

The team warms up for 10 minutes.

What time does Bob have to leave his house to play hockey?

- O 7:10
- O 7:35
- O 8:25
- O 8:50

Program Component: Problem-Solving Skills and Strategies using curriculum content - measurement based on telling the time to a five minute interval
Cognitive Level: Problem-Solving
Difficulty: Of the students tested with this item, 53% chose the keyed answer, indicating that the question is somewhat more difficult than usual.

In this question, students are required to predict the necessary time of departure to arrive at a destination at a specific time. The students may use strategies of the four stages of the problem-solving process.

Question 10

Which two numbers have a sum of 11 and a difference of 7?	0 5 and 6 0 2 and 9 0 6 and 17 0 4 and 18

Program Component: Problem-Solving Skills and Strategies using operations and properties - identifies addition, and subtraction situations
Cognitive Level: Problem-Solving
Difficulty: This question is predicted to have a 40% difficulty level, indicating that the question is a difficult one.

In this question, students may use strategies from the four stages of the problem-solving process.

Question 11

Which number sentence shows this problem?

A number is divided by three. The answer is five.

0 $5 \div 3 = __$

0 $__ \div 3 = 5$

0 $5 \div __ = 3$

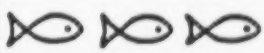
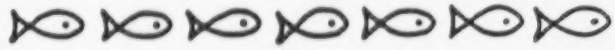
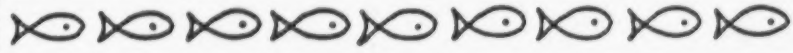
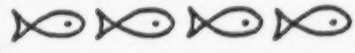
0 $__ \div 5 = 3$

Program Component: Subject Matter, operations and properties - symbolizes multiplication and division situations
Cognitive Level: Comprehension
Difficulty: This question is predicted to have a 45% difficulty level, indicating that the question is more difficult than average.

In this question, students are required to identify the symbolized division situation that matches the word problem.

Question 12 **Study this graph.**

FISH CAUGHT BY TOM

Sunday	
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	?

means one fish

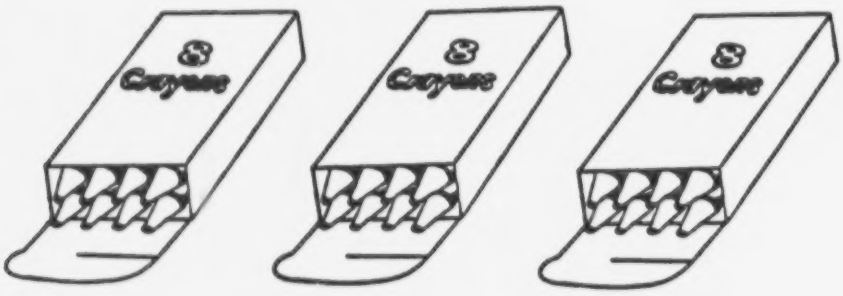
Tom caught a total of 30 fish.
How many fish did he catch on Saturday?

- O 0
- O 5
- O 25
- O 30

Program Component: Problem-Solving Skills and Strategies inside the curriculum content - graphing, interprets pictographs
Cognitive Level: Problem-Solving
Difficulty: Of the students tested with this item, 46% chose the keyed answer, indicating that the question is more difficult than average.

In this question students are required to find the number of fish caught on Saturday by subtracting from 30 the number of fish caught between Sunday and Friday. The students may use the four stages of the problem-solving process.

Question 13 **Terry wants to know how many crayons are in these boxes.**



Terry took all the crayons out and counted them one by one.

He found that there are 24 crayons in all.

What other way could Terry have found the total number of crayons?

- O Add 8 and 3
- O Subtract 3 from 24
- O Multiply 8 by 3
- O Divide 24 by 8

Program Component: Problem-Solving Skills and Strategies using curriculum content, - identifies a multiplication situation.
Cognitive Level: Problem-Solving
Difficulty: Of the students tested with this item, 73% chose the keyed answer, indicating that the question is a relatively easy one.

In this question, students are required to select an alternate operation that could be used to determine the number of crayons. The students may use strategies of the four stages of the problem-solving process.

Question 14

Which related sentence is missing?

$4 \times 5 = 20$
$5 \times 4 = 20$
$20 \div 4 = 5$

- O $5 + 4 = 9$
- O $20 - 5 = 15$
- O $20 \times 4 = 80$
- O $20 \div 5 = 4$

Program Component: Subject Matter, operations and properties - identifies related sentences for addition, subtraction, multiplication and division.
Cognitive Level: Comprehension
Difficulty: Of the students tested with this item, 81% chose the keyed answer, indicating that this question is an easy one.

In this question, students are to identify the missing related division sentence.

ADDITION

1 $5 + 0 =$

- ○ 0
- ○ 5
- ○ 6
- ○ 50

2 $8 + 4 =$

- ○ 12
- ○ 13
- ○ 14
- ○ 16

3 $2 + 3 =$

- ○ 3
- ○ 4
- ○ 5
- ○ 6

4 $3 + 5 =$

- ○ 8
- ○ 9
- ○ 13
- ○ 15

5

$$\begin{array}{r} 4 \\ +8 \\ \hline \end{array}$$

- ○ 10
- ○ 11
- ○ 12
- ○ 14

6

$$\begin{array}{r} 9 \\ +6 \\ \hline \end{array}$$

- ○ 13
- ○ 14
- ○ 15
- ○ 16

7

$$\begin{array}{r} 1 \\ +2 \\ \hline \end{array}$$

- ○ 2
- ○ 3
- ○ 4
- ○ 12

8

$$\begin{array}{r} 9 \\ +9 \\ \hline \end{array}$$

- ○ 9
- ○ 16
- ○ 17
- ○ 18

SUBTRACTION

1 $3 - 1 =$

- ○ 1
- ○ 2
- ○ 3
- ○ 4

2 $11 - 6 =$

- ○ 3
- ○ 4
- ○ 5
- ○ 7

3 $8 - 4 =$

- ○ 2
- ○ 3
- ○ 4
- ○ 5

4 $17 - 8 =$

- ○ 6
- ○ 7
- ○ 8
- ○ 9

5

$$\begin{array}{r} 4 \\ -0 \\ \hline \end{array}$$

- ○ 0
- ○ 1
- ○ 3
- ○ 4

6

$$\begin{array}{r} 16 \\ -9 \\ \hline \end{array}$$

- ○ 6
- ○ 7
- ○ 8
- ○ 9

7

$$\begin{array}{r} 9 \\ -7 \\ \hline \end{array}$$

- ○ 2
- ○ 3
- ○ 4
- ○ 7

8

$$\begin{array}{r} 7 \\ -7 \\ \hline \end{array}$$

- ○ 0
- ○ 1
- ○ 7
- ○ 14

MULTIPLICATION

1 $7 \times 0 =$

- ○ 0
- ○ 7
- ○ 8
- ○ 70

2 $6 \times 3 =$

- ○ 9
- ○ 15
- ○ 18
- ○ 24

3 $7 \times 6 =$

- ○ 13
- ○ 36
- ○ 42
- ○ 43

4 $3 \times 2 =$

- ○ 3
- ○ 4
- ○ 5
- ○ 6

.5

5 $\begin{array}{r} 4 \\ \times 4 \end{array}$

- ○ 8
- ○ 16
- ○ 24
- ○ 44

6 $\begin{array}{r} 9 \\ \times 5 \end{array}$

- ○ 14
- ○ 35
- ○ 40
- ○ 45

7 $\begin{array}{r} 1 \\ \times 5 \end{array}$

- ○ 0
- ○ 1
- ○ 5
- ○ 6

8 $\begin{array}{r} 4 \\ \times 8 \end{array}$

- ○ 12
- ○ 32
- ○ 34
- ○ 38

DIVISION

1 $24 \div 4 =$

- ○ 4
- ○ 5
- ○ 6
- ○ 20

2 $4 \div 2 =$

- ○ 2
- ○ 6
- ○ 8
- ○ 24

3 $30 \div 6 =$

- ○ 4
- ○ 5
- ○ 6
- ○ 24

4 $3 \div 1 =$

- ○ 1
- ○ 2
- ○ 3
- ○ 4

5 $5\overline{)45}$

- ○ 5
- ○ 8
- ○ 9
- ○ 40

6 $9\overline{)36}$

- ○ 3
- ○ 4
- ○ 9
- ○ 27

7 $2\overline{)10}$

- ○ 4
- ○ 5
- ○ 8
- ○ 10

8 $4\overline{)16}$

- ○ 4
- ○ 6
- ○ 8
- ○ 12

PERFORMANCE STANDARDS

Purpose of Performance Standards

The Grade 3 performance standards statement is intended to help educators develop a shared, province-wide understanding of acceptable and excellent levels of achievement for Grade 3 Mathematics.

Presented on the following pages are DRAFT statements which describe what is expected of Grade 3 students who are achieving at an acceptable or an excellent level of performance on independent work at the end of the *Grade 3 Mathematics Program*. Once finalized, these statements will represent the standards of performance against which provincial and/or local levels of student achievement will be compared. By comparing actual provincial results to expected provincial performance standards, it can be decided if achievement is in fact "good enough". The standards of performance inherent in these statements are derived from the goals and objectives of Grade 3 Mathematics as presented in the *Elementary Mathematics Curriculum Guide (1982)*.

Through discussions held with educators in developing the achievement tests, the expectation exists that 85 per cent of all students will meet acceptable levels of performance but only 15 per cent will achieve a level of excellence. We are interested in knowing if these standards of performance and the expectations of how many students will meet these levels of performance are appropriate. Your views regarding these expectations would be appreciated and may be forwarded to:

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GRADE 3 MATHEMATICS

STANDARD STATEMENTS

Target Group

The Grade 3 mathematics course is intended for all students who have been determined by their teachers to be ready for the regular Grade 3 program. In other words, these students will have successfully completed the Grade 2 mathematics program. The standards inherent in the Grade 3 mathematics course, described below, are for this target group.

Acceptable Level of Performance

Students who have achieved an acceptable level of performance in Grade 3 mathematics usually produce correct answers but they have a narrow understanding at this stage of development of the conceptual and procedural knowledge that is essential to the elementary mathematics program. For example, they may know that the solution to the statement 6 ÷ 2 is three, but may not understand that it symbolizes both the operation of dividing six objects into three groups of two, and that of dividing six objects into two groups of three. Similarly, they may understand that to solve a word problem they should identify key words in the statements, but they may not know how to determine which words are key and which ones are irrelevant.

For their level of performance to be considered acceptable, students must be reasonably proficient in their ability to use what they know to perform the mathematical operations and procedures that are fundamental to the program. Their ability to apply what they know and what they can do to solve both text-book and real-world problems may be somewhat more limited, however, because of their narrow understanding and limited ability to use the conceptual and procedural component of the program. For example, such students generally are able to correctly add and subtract two digit numbers, but may be unclear about which numbers to add and subtract when solving word problems. Similarly, they may be able to read a Celsius thermometer but be unable to use that information when making decisions about such things as the appropriate kind of clothing to wear for that particular temperature.

Students achieving acceptable levels of performance generally exhibit a positive attitude towards mathematics in their daily lives. However, at this stage of their development, these students lack tenacity in problem-solving and are reluctant to take the necessary risks to apply various strategies to solve a problem.

Excellent Level of Performance

Students achieving an excellent level of performance in Grade 3 mathematics have internalized the concepts. These students usually have an accurate and broad understanding of the conceptual and procedual knowledge that is essential to succeed in the program. In most cases students can easily demonstrate their mathematical knowledge and understanding in concrete, pictorial, and symbolic contexts. At this level, development of conceptual understandings at the concrete level occurs quickly and easily. These students know that the solution to the statement 6 + 2 is three and have the conceptual and procedual understanding to use manipulatives to transfer and apply their skills to new and real-life situations.

Students achieving an excellent level of performance have quite a well-developed sense of number in that they can often make a reasonable estimate and know if an answer makes sense or not. These students monitor their work regularly and are able to verbalize mathematical situations clearly, using correct technical terms. Overall, these students have the confidence to spontaneously apply their mathematical knowledge and skills in solving everyday mathematical problems, both in and out of the school context.

Students performing at an excellent level demonstrate an aptitude and interest in mathematics and show confidence in performing mathematical tasks. They are self-motivated, risk-takers, and demonstrate perseverance in solving problems in novel situations. As well, in many situations they are open to exploring and using the power of technology, i.e., calculators and computers. Similarly, they are expected to question if something does not seem to make sense, and they are not satisfied with "pat" answers.

APPENDIX

"Why Do We Have to Give These Tests?"
Achievement Tests and the Whole Language Success Story

Peggy Skett and Ruth Hayden

"Why do we have to give those tests?" is a question echoed in many staff rooms at the beginning of June. Frequently, those who are most forceful in voicing their concerns about Provincial Achievement Tests are those Grade Three teachers who adhered to the whole language philosophy. Comments such as "They don't fit with the way I teach"; "They are a waste of time"; "My kids don't know how to do those tests"; "They only measure product, not process" are commonplace as the testing date approaches. These teachers are not against evaluation per se; rather they are reluctant to accept an evaluation tool which they feel has little validity with respect to their teaching philosophies.

Evaluation is defined as a judgement made about student performance in relation to defined outcomes. It is an umbrella or inclusive term which encompasses other terms like assessment, diagnosis, and interpretation. Evaluation is the process of judging the value of what has been assessed. Assessment occurs in many different ways — all providing information about what a student has learned. Standardized tests (to which Provincial Achievement Tests belong) are one kind of assessment. Other less formal types are anecdotal records, observational checklists, and accumulated files of student work. As an achievement test for one of four subject areas is given annually to all Grade Three students in the Province, it seems reasonable and fair to examine the justification for concerns such as those noted above.

WHY DO I HAVE TO GIVE STANDARDIZED TESTS?

The purpose of standardized testing is to provide for valid comparisons across groups — among schools and among school jurisdictions throughout the province. A perfect comparison may not be possible, however, because teachers of young children naturally give prompts to their students as they do the test, in spite of the administration manual directions. Just one little prompt can put one group at an advantage.

Standardized tests are used to provide information about how well student learning outcomes are being achieved. These tests provide one measure of accountability and are a way of reporting what is happening in our schools to the rest of society by informing both the public and ourselves about the strengths and weaknesses of our programs.

HOW VALID IS THE TEST IF MY STUDENTS DON'T NORMALLY EXPERIENCE THIS KIND OF SITUATION?

It is possible that the testing experience might not be valid, especially for Grade 3 children in whole language classrooms. The test itself may not reflect meaningful language experiences through which students are provided a total context for reading and writing. Since testing is not a common experience for such young children, Alberta Education actually states in their Student Achievement Testing Program Bulletin that teachers should prepare their students for the testing situation by explaining the purpose of the test beforehand and giving their students the sample questions contained in the bulletin. Students should have practice with the test format and should not meet it without any preparation. Just as teachers prepare their students for a wide variety of experiences such as street safety at Halloween, turn-taking during group play, or how to borrow books from the library, so too they can assist their students in coping with the requirements needed to do the test in competent ways.

AREN'T STUDENTS THIS AGE TOO YOUNG TO BE TESTED?

For some students in Grade Three -- yes, there are some reasons for which the testing experience is inappropriate, for example, ESL students or others who have particular language deficits. However, Alberta Education makes provisions for those students whom teachers feel the test would be inappropriate and allows them to not write the test, by permission of the district superintendent.

WHO MAKES UP THESE TESTS?

The tests are created by classroom teachers who are considered to be knowledgeable about specific subject content. In the case of preparing Alberta Education achievement testing, teachers, consultants, and Alberta Education personnel are involved. The process of development is quite lengthy. Questions are created according to those curriculum specifications previously set out by Alberta Education. The questions are grouped into tests which are piloted throughout the province. Based upon several piloting efforts, the actual test is composed of those questions which have been revised a number of times. The final draft is examined by an Achievement Test Review Committee which includes representatives from the ATA, Council of Alberta School Superintendents, Alberta post-secondary institutions, and Alberta Education.

Alberta Education gives all teachers in the province a mandate in the form of educational outcomes of what it expects students to learn in school. In other words, teachers are expected to provide their students with those learning opportunities which will allow them to understand the various curricula. The teaching methods and curriculum implementation are not dictated. Only the outcomes of the teaching/learning process are measured.

WHAT IF I HAVEN'T TAUGHT A PARTICULAR SKILL OR UNIT?

If we have followed the program of studies, then this is no problem. Remember, the test questions are aligned with provincial outcomes. By examining the curriculum guides and by planning our teaching to meet the demands of these guides regardless of our education philosophies or methodologies, we can be sure that our students are adequately prepared to understand the content of the tests.

WHY DOES IT TAKE SO MUCH TIME TO GIVE THE TESTS?

The time element is not really a critical factor. For example, a Grade 3 student will spend approximately two hours writing the provincial test. When one considers that the tests are supposed to reflect the curriculum learning in the tested subject for the first three grades, two hours over a three-year period is somewhat minimal.

ARE NOT OTHER EVALUATION METHODS BETTER?

Yes, but for other purposes. In order for Alberta Education to be able to measure student achievement across the province, something standard must be used. Thus, we have the achievement tests.

To argue that informal evaluation is sufficient of itself as the sole measure of the learning that goes on in our classrooms holds no more credibility than the argument that achievement testing is the only true evaluation of our teaching endeavors. There is danger when one form of evaluation is given priority and emphasized as being the one and only method by which we judge.

Both forms of assessment are necessary to provide complete profiles of student learning. One form is not more valuable than the other. On the contrary, informal and formal compliment each other in assessing the breadth and depth of student achievement whether individually or as groups.

WHY DO I HAVE TO GIVE THE TESTS WHEN I CAN'T USE THE RESULTS FOR FINAL REPORT CARDS?

This is valid — to a point. It is true that results, which are returned to the schools in September, cannot be used for evaluation in June. However, they can be used to determine if there are any gaps or strengths in our program.

Furthermore, the bulletin from Alberta Education actually states that the test results are not to be used to provide information for student placement or promotion. Results are sent to each respective school jurisdiction. A district profile, as well as individual student profiles are sent to the superintendents and principals of schools where students wrote the exams. No individual statements are sent to students. It becomes important then to have other assessment tools in place -- to demonstrate to students and their parents the progress that has been achieved.

I TEACH READING FROM MEANINGFUL WHOLE PASSAGES SO THAT STUDENTS CAN USE ALL THEIR CUEING SYSTEMS. HOW DOES THE TEST PROVIDE FOR THIS?

A test format may isolate specific skills in order to measure them. Alberta Education test developers are presently attempting to meet this concern by providing meaningful passages which are complete within the test — for example, poems or short stories.

CONCLUSION

There may always be tension about evaluation tools just as there are differences of opinion about various philosophies and methods of teaching reading and writing. However, if we believe in our philosophy of providing children with opportunities for meaningful language learning in our classrooms and if we believe that our wholistic approaches to instruction and learning encourage them to be competent users of language, student success on Provincial Achievement tests will highlight the worth of our programs.

If on the other hand, our results from the achievement tests do not reach acceptable standards, all our other forms of assessment will be called into question, making educational policy makers suspicious of our philosophies and the wholistic approaches we currently are using in our classrooms. By understanding why achievement tests are mandated, how they are developed, and what they involve, we may be, like our students, better prepared to test the metal of our beliefs and ensure continued success with these exciting language learnings in our classroom.

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